CLAIMS

1. A wavelength division multiplex optical ring network comprising optical fibre (1–4) arranged in a ring configuration and a plurality of doped fibre optical amplifiers (17-20) arranged in the ring, in which the spectral response in the ring is configured such in use amplified spontaneous emission (ASE) noise circulates around the ring in a lasing mode to clamp the gain of each doped fibre optical amplifier; characterised in that each optical amplifier includes respective control means (28) which in use control the optical amplifier to produce a substantially constant output power or to maintain a substantially constant pump power.

2. An optical network as claimed in claim 1, and further comprising detection means (27) arranged to switch control of the optical amplifiers (17-20) to a different mode of operation, in response to the detection of the absence of a lasing peak.

3. An optical network as claimed in claim 2, in which the detection means is arranged to switch the optical amplifiers to a gain control mode after loss of the lasing peak in which the gain before the loss of the lasing peak is maintained.

4. An optical network as claimed in claim 3, in which the optical amplifiers are arranged to switch to constant output power mode, or constant pump power mode, after a predetermined delay after the gain control mode has been established.

5. An optical network as claimed in any of claims 1 to 4, in which the detection means includes means (21, 22, 25) for tapping a fraction of the input or output power of

each optical amplifier, and detectors for measuring the input and/or output powers (27,24).

6. An optical network as claimed in claim 5, in which the detection means includes a filter (26) for passing only ASE noise, and a detector (27) for detecting the presence or absence of the lasing peak.

7. An optical network as claimed in claim 5, in which the detection means includes a filter (26) for passing only ASE noise, and a detector (27, 23) for detecting a simultaneous decrease in the powers of both the ASE noise peak and the total power input.

8. An optical network as claimed in claim 5, in which the detection means includes a detector for detecting a decrease in the power of the input to each optical amplifier.

9. An optical network as claimed in any one of claims 1 to 8, in which, in the event of slow drift of the optical amplifiers, the working point is changed in use to restore the level of the ASE peak.